## AMENDMENTS TO THE SPECIFICATION

***Please replace paragraph [0005] with the following amended paragraph:***

**[0005]** It is therefore one aspect ~~the object~~ of the present invention to provide a method for the computer-assisted determination of an optimum-fuel control of nozzles that manages with the lowest possible computation expenditure and nevertheless reliably leads to an optimum-fuel solution.

***Please replace paragraph [0006] with the following amended paragraph:***

**[0006]** This aspect ~~object~~ is attained through ~~the~~ a method for the computer-assisted determination of an optimum-fuel control of nozzles according to a control instruction $b=Ax$, where b represents a desired m-dimensional forces/torque vector, A represents an mxn-dimensional nozzle matrix, and x represents the sought n-dimensional nozzle control vector and the nozzle control vector should meet the minimization criterion $J := \sum_{i=1}^{i=n} x_i \rightarrow \min$. The method further includes a defined matrix transformation of starting constraints for the mass flow of the nozzles and of the minimization criterion that takes place in a computer-assisted manner, a data processing representation of a geometric description of the matrix-transformed starting constraints takes place in a computer-assisted manner, and through a computer-assisted geometric search procedure in the vector space, where a computer-assisted determination of limiting point sets of the geometric description of the starting constraints takes place. Finally, the matrix-transformed minimization criterion is applied to the points of the limiting point sets. ~~features of claim 1.~~ The invention further ~~comprises~~ includes a computer program for the computer-assisted determination of an optimum-fuel control of nozzles according

to a control instruction $b=Ax$, where b represents a desired m-dimensional forces/torque vector, A represents an mxn-dimensional nozzle matrix, and x represents the sought n-dimensional nozzle control vector and the nozzle control vector should satisfy the minimization criterion $J := \sum_{i=1}^{i=n} x_i \rightarrow \min$. The computer program contains a first program routine for the computer-assisted execution of a defined matrix transformation of starting constraints for the mass flow of the nozzles and the minimization criterion, a second program routine for the computer-assisted execution of a data processing representation of a geometric description of the matrix-transformed starting constraints, a third program routine for the computer-assisted execution of a geometric search procedure in the vector space for the computer-assisted determination of limiting point sets of the geometric description of the starting constraints, and a fourth program routine for the computer-assisted application of the matrix-transformed minimization criterion to the points of the limiting point sets ~~according to claim 5~~. Finally, the invention includes ~~and~~ a computer program product that includes a computer program product containing a machine-readable program carrier on which the above-noted computer program can be stored in the form of electronically readable control signals ~~according to claim 6~~.

***Please add the following paragraph after paragraph [0018]:***

**[0018.1]** One aspect of the present invention includes a method for computer-assisted determination of an optimum-fuel control of nozzles according to a control instruction

$b=Ax$, where: b represents a desired m-dimensional forces/torque vector, A represents an m x n-dimensional nozzle matrix, and x represents a sought n-dimensional nozzle control vector and the nozzle control vector should meet a minimization criterion of $J := \sum_{i=1}^{i=n} x_i \rightarrow \min$. The method includes computer generating a defined matrix transformation of starting constraints for a mass flow of the nozzles and of the minimization criterion, data processing a representation of a geometric description of the matrix transformation of starting constraints, searching, with a computer-assisted geometric search procedure in vector space, limiting point sets of the geometric description of the starting constraints, and applying the matrix transformation of minimization criterion to the points of the limiting point sets. Moreover, the matrix transformation of the starting constraints for the mass flow of the nozzles can include a homogenous solution of the control instruction according to $x_{ho}=A_o r$ where $A_o$: represents the $n$ x $(n\text{-}m)$ dimensional zero space matrix of $A$, and $r$: represents an $(n\text{-}m)$ dimensional vector of real numbers. Additionally, the method can include calculating, within a scope of a use of the matrix transformation of the minimization criterion, scalar products of a vector representation of points of the limiting point set and the vector $v_d^T := \left[ \sum_{j=1}^{n} A_{0j1} \sum_{j=1}^{n} A_{0j2} \cdots \sum_{j=1}^{n} A_{0jp} \right], p := n - m$ and calculating an optimum-fuel solution with the aid of the vector $r$ whose scalar product is minimal with the vector $v_d$. Furthermore, the method can include converting the matrix transformation of the starting constraints for the mass flow of the nozzles in a computer-assisted manner into allowable multi-dimensional

value regions, forming, to determine the limiting point sets, at least one multi-dimensional cut set of individual allowable multi-dimensional value regions, and determining the limiting point sets as those point sets that limit the at least one cut set. The method can also include repeatedly projecting the allowable multi-dimensional value regions of the dimension p on a dimension p-1, until a projection of the allowable value regions on limiting intervals of a dimension p=1 has been achieved, and subsequently searching, with a computer-assisted search procedure, a determination of limiting point sets as a cut set of limiting intervals. Yet another aspect of the invention includes a computer program for the computer-assisted determination of an optimum-fuel control of nozzles according to a control instruction $b=Ax$, whereby b represents a desired m-dimensional forces/torque vector, A represents an m x n-dimensional nozzle matrix, and x represents a sought n-dimensional nozzle control vector and the nozzle control vector should satisfy the minimization criterion of $J := \sum_{i=1}^{i=n} x_i \rightarrow \min$. The computer program further includes a first program routine for defining a matrix transformation of starting constraints for a mass flow of the nozzles and the minimization criterion, a second program routine for data processing a representation of a geometric description of the matrix transformation of the starting constraints, a third program routine for the execution of a geometric search procedure in the vector space for the determination of limiting point sets of the geometric description of the starting constraints, and a fourth program routine

for the application of the matrix transformation minimization criterion to the points of the limiting point sets. Moreover, a computer program product containing a machine-readable program on which a computer program, as noted above, can be stored in the form of electronically readable control signals. Another aspect of the invention includes a computer control method to obtain optimum-fuel usage for nozzles based on an m-dimensional forces/torque vector, m x n-dimensional nozzle matrix, and an n-dimensional nozzle control vector that meets a minimization criterion. The method includes generating a defined matrix transformation of starting constraints for a mass flow of the nozzles and of the minimization criterion, data processing a representation of a geometric description of the matrix transformation of starting constraints, searching, with a geometric search procedure in vector space, limiting point sets of the geometric description of the starting constraints, and applying the matrix transformation of minimization criterion to the points of the limiting point sets. Moreover, the control instruction can be b=$Ax$, where b represents the desired m-dimensional forces/torque vector, A represents the m x n-dimensional nozzle matrix, and x represents the sought n-dimensional nozzle control vector and the nozzle control vector should satisfy the minimization criterion of $J := \sum_{i=1}^{i=n} x_i \rightarrow \min$. Additionally, the matrix transformation of the starting constraints for the mass flow of the nozzles can include a homogenous solution of the control instruction according to $x_{ho}=A_0 r$, where $A_0$: represents the $n$ x $(n-m)$ dimensional zero space matrix of $A$, and $r$:

represents an *(n-m)* dimensional vector of real numbers. The method can further include calculating, within a scope of a use of the matrix transformation of the minimization criterion, scalar products of a vector representation of points of the limiting point set and the vector $v_d^T := \left[ \sum_{j=1}^{n} A_{0j1} \sum_{j=1}^{n} A_{0j2} \cdots \sum_{j=1}^{n} A_{0jp} \right], p := n - m$ and calculating an optimum-fuel solution with the aid of the vector *r* whose scalar product is minimal with the vector $v_d$. Additionally, the method can include converting the matrix transformation of the starting constraints for the mass flow of the nozzles into allowable multi-dimensional value regions, forming, to determine the limiting point sets, at least one multi-dimensional cut set of individual allowable multi-dimensional value regions, and determining the limiting point sets as those point sets that limit the at least one cut set. Furthermore, the method can include repeatedly projecting the allowable multi-dimensional value regions of the dimension p on a dimension p-1, until a projection of the allowable value regions on limiting intervals of a dimension p=1 has been achieved, and subsequently searching a determination of limiting point sets as a cut set of limiting intervals. Another aspect of the invention includes a computer program for determining an optimum-fuel control of nozzles according to a control instruction based on a desired m-dimensional forces/torque vector, an m x n-dimensional nozzle matrix, and a sought n-dimensional nozzle control vector where the nozzle control vector should satisfy a minimization criterion. The computer program includes a first program routine for defining a matrix

transformation of starting constraints for a mass flow of the nozzles and the minimization criterion, a second program routine for data processing a representation of a geometric description of the matrix transformation of the starting constraints, a third program routine for the execution of a geometric search procedure in the vector space for the determination of limiting point sets of the geometric description of the starting constraints, and a fourth program routine for the application of the matrix transformation minimization criterion to the points of the limiting point sets. Moreover, the control instruction can be $b=Ax$, where b represents the desired m-dimensional forces/torque vector, A represents the m x n-dimensional nozzle matrix, and x represents the sought n-dimensional nozzle control vector and the nozzle control vector should satisfy the minimization criterion of $J := \sum_{i=1}^{i=n} x_i \rightarrow \min$. Also, a computer program product containing a machine-readable program on which the computer program noted above can be stored in the form of electronically readable control signals.

***Please replace paragraph [0020] with the following amended paragraph:***

**[0020]** The present invention is further described in the detailed description which follows, in reference to the noted plurality of drawings by way of non-limiting examples of exemplary embodiments of the present invention, in which like reference numerals represent similar parts throughout the several views of the drawings, and wherein:

Figure 1 shows an allowable ~~Fig. 1: Allowable~~ region for the vectors $r$ in space of the dimension p=2, whereby an inequation of constraint $n_i^T(r - \lambda_i n_i) \geq 0$ is met;

Figure 2 shows an allowable ~~Fig. 2: Allowable~~ region for $r$ in two-dimensional space taking into account the starting constraints for several nozzles;

Figure 3 shows an allowable ~~Fig. 3: Allowable~~ region for $r$ in the one-dimensional space taking into account the starting constraints for several nozzles;

Figure 4 shows a cut ~~Fig. 4: Cut~~ set of two (p-1)-dimensional planes;

Figure 5 shows linear ~~Fig. 5: Linear~~ coordinates transformation of unit vectors; and

Figure 6 shows a comparison ~~Fig. 6: Comparison~~ between computation time of a conventional method according to a simplex algorithm and the method according to the invention.